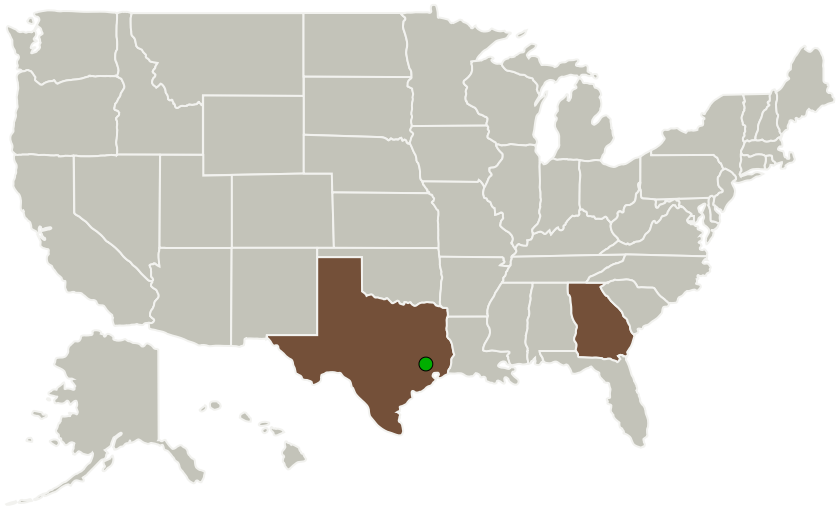
Low-Cost Small Reentry Devices to Enhance Space Commerce and ISS Utilization, Phase II

Completed Technology Project (2015 - 2017)

Project Introduction

Terminal Velocity Aerospace, LLC (TVA) proposes to enable commercial space activity and improve utilization of the International Space Station (ISS) through use of small reentry devices (REDs) for high-temperature materials flight testing and small payload return missions. TVA is presently developing two RED systems with a high degree of technological similarity. The first is RED-Data2, a 1.7 kg capsule that rides along with a host vehicle to collect engineering data during reentry and breakup. RED-Data2 can also serve as a test-bed for testing and demonstrating high-temperature materials in actual flight conditions. The second device, named RED-4U, is a recoverable capsule sized to accommodate a payload mass and volume equivalent to four CubeSats or more. As the next step in hardware development toward commercialization of these systems, TVA proposes to produce a flight unit RED-Data2 and an engineering development unit of RED-4U. Flight of a RED-Data2 serves as an opportunity to both demonstrate the materials flight test mission, and to demonstrate key technologies for the RED-4U mission. The RED-4U engineering development unit is an important step toward an operational RED-4U system for on-demand return of experiment samples. Both RED-Data2 and RED-4U enable innovative commercial space activity and improved utilization of the ISS.

Primary U.S. Work Locations and Key Partners



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Organizations Performing Work	Role	Type	Location
Terminal Velocity Aerospace, LLC	Lead Organization	Industry	Atlanta, Georgia
Johnson Space Center(JSC)	Supporting Organization	NASA Center	Houston, Texas

Primary U.S. Work Locations	
Georgia	Texas

Images

Briefing Chart Image
Low-Cost Small Reentry Devices to Enhance Space Commerce and ISS Utilization, Phase II
(https://techport.nasa.gov/image/135200)

Organizational Responsibility

Responsible Mission Directorate:
Space Technology Mission Directorate (STMD)

Lead Organization:
Terminal Velocity Aerospace, LLC

Responsible Program:
Small Business Innovation Research/Small Business Tech Transfer

Project Management

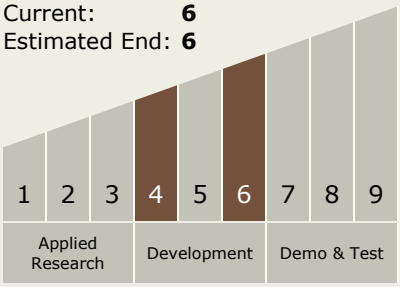
Program Director:
Jason L Kessler

Program Manager:
Carlos Torrez

Principal Investigator:
John A Dec

Technology Maturity (TRL)

Start: **4**
Current: **6**
Estimated End: **6**



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Technology Areas

Primary:

- TX09 Entry, Descent, and Landing
  - TX09.4 Vehicle Systems
    - TX09.4.7 Guidance, Navigation and Control (GN&C) for EDL

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System